

WHAT IS CLAIMED IS:

1. A deformable mirror system comprising:

a deformable mirror which includes a flexible thin film and a control electrode, the flexible thin film having a reflecting surface deformable by an electrostatic attractive force and an upper electrode, and the control electrode being arranged opposite to the upper electrode; and

a power supply configured to apply a potential difference between the upper electrode and the control electrode of the deformable mirror, and to control the form of the reflecting surface of the deformable mirror to a desired form; wherein

the power supply controls the amount of deforming the reflecting surface by changing a duty ratio of a voltage applied across the upper electrode and the control electrode.

2. The system according to claim 1, wherein a frequency of the voltage applied across the upper electrode and the control electrode is higher than a resonance frequency of the flexible thin film having the reflecting surface and the upper electrode.

3. The system according to claim 1, wherein a frequency of the voltage applied across the upper electrode and the control electrode is higher than a higher one of a resonance frequency of the flexible thin film having the reflecting surface and the upper

electrode, and a maximum audible frequency.

4. The system according to claim 3, wherein the maximum audible frequency is 20 kHz.

5. The system according to claim 1, wherein an  
5 waveform of the voltage applied across the upper electrode and the control electrode is suppressed in a high-frequency component compared with a rectangular wave.

6. The system according to claim 5, wherein at  
10 least one of a resistor and an element having an inductance component is inserted into one of an electric circuit between the power supply and the upper electrode and an electric circuit between the power supply and the control electrode.

15 7. The system according to claim 6, wherein a member which supports one of the flexible thin film and control electrode is configured by a silicon substrate; and

at least one of the resistor and the element  
20 having the inductance component is arranged on the silicon substrate.

8. The system according to claim 1, wherein the power supply limits the current to flow in one of the upper electrode and the control electrode of the  
25 deformable mirror, to be lower than a predetermined value.

9. A method of controlling a form of a reflecting

surface, comprising:

applying a potential difference between an upper electrode and a control electrode of a deformable mirror to control the form of the reflecting surface of the deformable mirror to a desired form, the deformable mirror including a flexible thin film and the control electrode, the flexible thin film having the reflecting surface deformable by an electrostatic attractive force and the upper electrode, and the control electrode being arranged opposite to the upper electrode, wherein the amount of deforming the reflecting surface is controlled by changing a duty ratio of a voltage applied across the upper electrode and the control electrode.

10. A deformable mirror system comprising:

a deformable mirror which includes a flexible thin film and a control electrode, the flexible thin film having a reflecting surface deformable by an electrostatic attractive force and an upper electrode, and the control electrode being arranged opposite to the upper electrode; and

control means for applying a potential difference between the upper electrode and the control electrode of the deformable mirror, and to control the form of the reflecting surface of the deformable mirror to a desired form; wherein

the control means controls the amount of deforming

the reflecting surface by changing a duty ratio of a voltage applied across the upper electrode and the control electrode.